TECHNICAL NOTES

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Do Pruned Red Pine Trees Remain Dominant?

Pruning crop trees to improve wood quality is an accepted practice in red pine (Pinus resinosa Ait.) plantations. Recommendations for the safe limits of live crown removal or height of pruning have been based primarily on the effect of pruning on height and diameter growth. The study discussed below indicates that the ability of the crop trees to compete with their unpruned neighbors is a simple and usable criterion of the effects of pruning on tree vigor.

The effect of pruning on crown position was evident when the pruned trees in two plantations in northern Lower Michigan were examined five growing seasons after treatment (fig. 1).

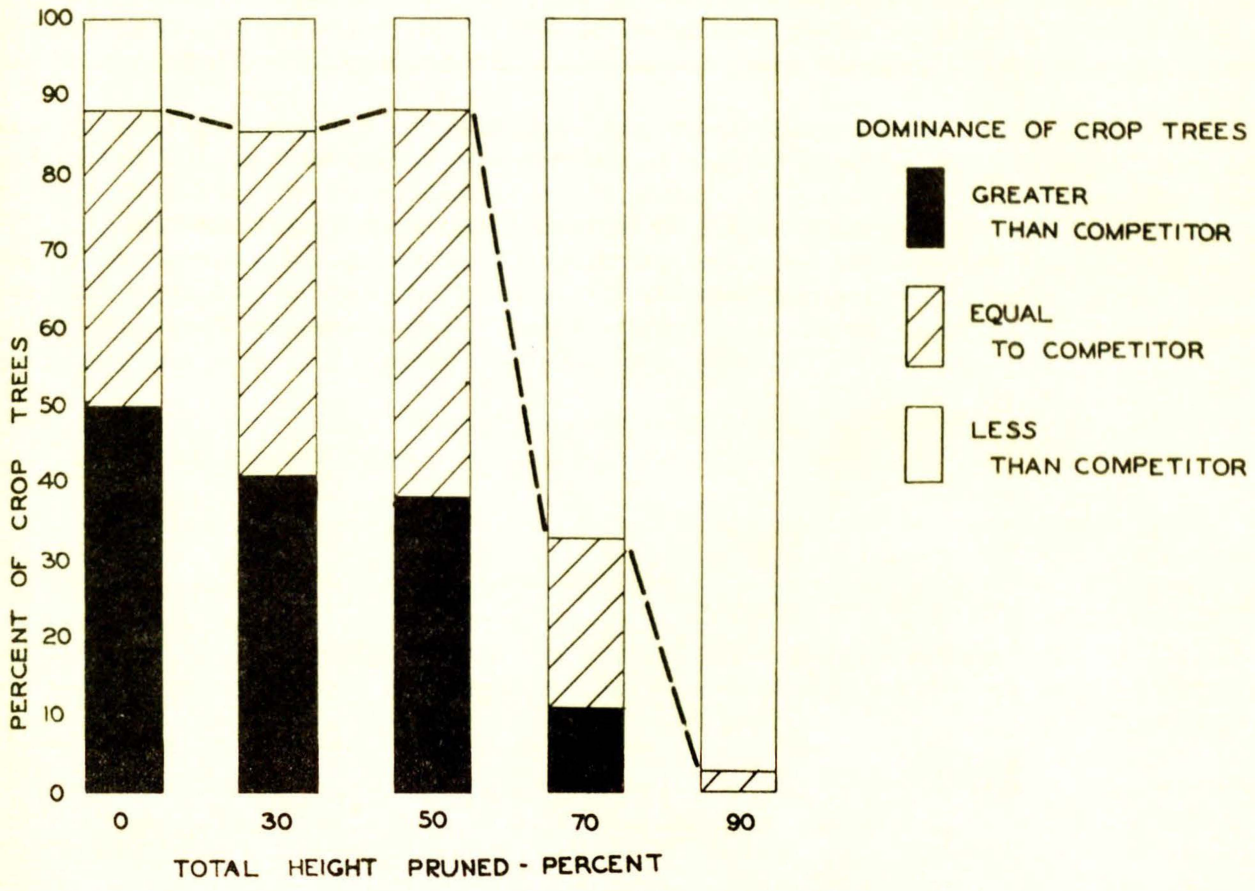

Figure 1.--Effect of live crown removal on dominance.

(over)

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MAINTAINED AT ST. PAUL 1, MINNESOTA, IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA

A total of 105 trees had been pruned in 1950 to 30, 50, 70, or 90 percent of their total height. Twenty-four unpruned trees provided a measure of normal undisturbed growth. At the time of treatment, all 129 trees were dominants and codominants averaging 16 feet in height. Total height and live crown length were the same. None of the sample trees were competing with any other sample tree. The site was classed as good to very good.

Each sample tree and its strongest competitor were classified in 1956 as to their relative dominance.[1/] A grouping was then made based on the comparative dominance, that is, whether the sample tree was of greater, equal, or lesser dominance than its competitor.

The present status of the unpruned check trees indicates that the initial selection of the crop trees was good. Fifty percent are of greater dominance, 38 percent are of equal, and 12 percent of lesser dominance.

For the pruned trees the critical point of live crown removal in the maintenance of dominance was found to lie between the 50- and 70-percent treatments. Measurements of height and diameter growth showed that this was also the point where growth losses became excessive. Eighty-eight percent of the trees pruned to 50 percent of total height are in the classes likely to remain dominant (greater than or equal to competitors) compared to 33 percent for those trees pruned to 70 percent. None of the trees pruned to 90 percent are of greater dominance and only 3 percent are in equally dominant crown positions.

It is evident that trees pruned to 70 and 90 percent have been affected by pruning more seriously than their 5-year height growth reductions of 1.2 and 3.2 feet respectively would indicate. Loss of dominance is so serious that most of these trees will soon be suppressed by adjacent unpruned trees and the investment in pruning lost unless they are released by thinning. Enough trees pruned to 30 and 50 percent will remain dominants and cutting can be deferred for another 5-year period, at which time a commercial thinning can be made.

1/ Gevorkiantz, S. R., Rudolf, P. O., and Zehngraff, P. J. 1943. A tree classification for aspen, jack pine, and second-growth red pine. Jour. Forestry 41: 268-274, illus.